IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

ATTY DOCKET NO.: AT9-99-705

In re Application of:	§	
George Andrew Kephart, et al.	§	Examiner: **Viet Duy Vu**
Serial No.: **09/557,111**	§	Art Unit: **2154**
Filed: **April 24, 2000**	§	
For: **METHOD AND SYSTEM FOR AGGREGATING INTERFACE ADDRESSES**	§	

APPEAL BRIEF UNDER 37 C.F.R. § 1.192

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Sir:

This Appeal Brief is submitted in triplicate in support of an Appeal of the Examiner's final rejection of Claims 1-7 in the above-identified application. A two month extension of required time is required beyond the period for reply stated in the Final Office Action. That extension of time is hereby requested. Please charge the fee of $420 to cover the extension of time and the fee of $330.00 due under 37 C.F.R. § 1.17(c) for filing the brief, as well as any additional required fees, to **IBM Deposit Account No. 09-0447**.

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Typed or Printed Name: Shenise Ramdeen *Date:* 7/13/04 *Signature:* S Ramdeen

REAL PARTY IN INTEREST

The real party in interest in the present Appeal is International Business Machines Corporation, the Assignee of the present application as evidenced by the Assignment recorded at reel 010783 and frame 0634 *et. seq.*

RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences known to Appellants, the Appellants' legal representative, or assignee, which directly affect or would be directly affected by or have a bearing on the Board's decision in the pending appeal.

STATUS OF CLAIMS

Claims 1-4 and 7 stand finally rejected by the Examiner as noted in the Final Office Action dated January 21, 2004. Claims 8-12, 14-16, and 18-29 are allowed and Claims 5-6 are conditionally allowed. These allowed and conditionally allowed claims are not the subject of the present appeal.

STATUS OF AMENDMENTS

Appellants' Amendment A, filed on December 5, 2003, was entered by the Examiner, as noted in the Final Office Action. No amendments have been made subsequent to the Final Action from which this Appeal is filed.

SUMMARY OF THE INVENTION

Appellants' invention provides a method for reducing processing time for resolving a destination address of packets received at a node on a network. As stated at page 10, lines 10-12 and 25-27, multiple addresses (with similar higher address bits) on a node of the network are represented by a single mask address. The mask address includes two values (sets of bits) of importance, a first value (P) representing the actual size of the address space and a second value (Pk or "prefix") that indicates the particular portion of the address space that is important (page 13, ll 3-8).

The prefix itself contains two pieces of information (1) the particular setting of the bits, and (2) the number of bits which are important or which are in the prefix (id. ll 10-12). This is further explained at ll 12-32. The prefix is not the address space but is added to the first value (P) to provide an indication of the relevant portion of the address that is to be compared. The mask address (particularly the first value) is utilized to complete the network level comparison (page 12, line 20-30) of a packet address with the identified relevant portion of the mask address of the address space represented at the node. This comparison is completed before the packet is passed to the node to complete the local level address comparison.

As recited by exemplary Claim 1, Appellants' invention provides the following features: "an aggregation utility, for aggregating multiple addresses hosted on said network node into a single representative maskaddress that includes a prefix indicating a number of relevant bits within consecutive addresses utilized within said maskaddress; and an address resolution utility for determining destination addresses of said packets using said maskaddress."

ISSUES

The primary issue for appeal is whether Examiner's rejections of Appellant's claim 1-2 and 7 under 35 U.S.C. § 102(e), as being anticipated by *Alkhatib*, et al. (U.S. Patent No. 6,006,206) and Claims 3-4 under 35 U.S.C. 103(a) as being unpatentable over *Alkhatib* are well founded. Tantamount to a resolution of that issue is a determination whether *Alkhatib* teaches 'a mask address that includes a prefix indicating a number of relevant bits ... within the mask address".

GROUPING OF THE CLAIMS

For purposes of this Appeal, Claims 1-4 and 7 stand or fall together as a single group. The other claims present in the Application are allowable and are not the subject of the present appeal.

ARGUMENT

Examiner's rejection of Appellant's exemplary Claim 1 as being anticipated by *Alkhatib* is not well founded and should be reversed.

Appellants hereby incorporate by reference the arguments proffered in Amendment A with respect to the rejection of exemplary Claim 1. Appellants reiterate that *Alkhatib* does not anticipate Appellants' claims because *Alkhatib* fails to teach a key feature recited by Appellants' exemplary claim. Specifically, *Alkhatib* fails to teach: a "maskaddress that includes a **prefix** indicating a **number** of relevant **bits** within consecutive addresses utilized within said maskaddress" (emphasis added).

As is clearly described in the specification, the term "prefix" refers to one portion of the two parts of the mask address that stores a number indicating the number of relevant bits within the address portion of the mask address that are to be utilized during the comparison of the mask address to the address of an incoming packet. For example, a prefix with a value of 7 (0111) indicates that only the first seven bits of the packet's address should be compared to the mask address to determine whether the packet is at the correct node in the network.

Alkhatib provides a system for determining a network address by providing a subnet mask for two or more nodes on a network. *Alkhatib's* method allows a new node to select common address components among the nodes (as a subnet mask) and then add a specific host address to identify the particular node from the others within the subnet. Alkhatib is devoid of any teaching or suggestion of tracking the number of relevant address bits within the subnet mask and assigning that number as a prefix, which is added to the mask address for the node. In fact, *Alkhatib*, at col. 4, ll 64-65, specifically states that "[e]ach bit in the subnet mask corresponds to a bit in the IP address." This statement clearly eliminates any teaching (or consideration) of additional bits (i.e., a prefix) that may be utilized to indicate the number of relevant bits for comparison with the mask address.

Alkhatib fails to teach (and does not suggest) providing a mask address containing a **prefix** and related functionality, and Examiner fails to indicate any specific section within

Alkhatib that teaches (or even suggests) this feature. The standard for a § 102 rejection requires that the reference teach each element recited in the claims set forth within the invention. As clearly outlined above, Alkhatib fails to meet this standard and therefore does not anticipate Appellants' exemplary claim.

With the above arguments, Appellants have clearly shown that *Alkhatib* does not teach a key feature recited by Appellants' exemplary claim. Appellants' claims are therefore not anticipated by or unpatentable over *Alkhatib* and should be allowed. For these reasons, Examiner's rejection of Appellants' claims 1-4 and 7 is not well founded and should be reversed.

CONCLUSION

Appellants have pointed out with specificity the manifest error in the Examiner's rejections, and the claim language which renders the invention patentable over the combination of references. Appellants, therefore, respectfully request that this case be remanded to the Examiner with instructions to issue a Notice of Allowance with respect to all pending claims.

Respectfully submitted,

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APPENDIX

1. (Appealed) A system for decreasing latency of destination address resolution of packets at a network node comprising:

an aggregation utility, for aggregating multiple addresses hosted on said network node into a single representative maskaddress that includes a prefix indicating a number of relevant bits within consecutive addresses utilized within said maskaddress; and

an address resolution utility for determining destination addresses of said packets using said maskaddress.

2. (Appealed) The system of Claim 1, wherein said multiple addresses contain at least a single most significant bit in common to create a definable address space of consecutive addresses.

3. (Appealed) The system of claim 2, wherein said aggregation utility comprises:

means for determining which of said consecutive addresses are present within said node;

means for creating said maskaddress and prefix when at least two of said consecutive addresses are present within said node.

4. (Appealed) The system of Claim 3, wherein said determining means utilizes a percent aggregation rule.

5. (Conditionally allowed) The system of Claim 4, further comprising:

a negative address utility for determining which addresses from within said address space are not present on said network node, wherein a resulting negative address is utilized along with said mask address to efficiently select packets with destination address which are located on said network node.

6. (Conditionally allowed) The system of claim 5, wherein said negative address utility comprises:

means for determining whether a particular percentage of said consecutive addresses are present within said node;

means for creating said negative address when said particular percentage of consecutive addresses is present in said subspace.

7. (Appealed) The system of Claim 1, wherein said address resolution utility includes a comparison utility for comparing said destination address with said mask address.

8. (Allowed) A method for efficient determination of the correct destination of a packet on a network, said method comprising the steps of:

dynamically creating a maskaddress with a prefix to represent a plurality of consecutive IP addresses located at a node;

comparing a destination address of said packet with said maskaddress to determine if said destination address is similar to said maskaddress;

when said comparing step results in a match and a negative address is affiliated with said maskaddress:

checking said destination address against said negative addresses, wherein said negative address is an address determined to be missing from a group of addresses represented by said maskaddress; and

rejecting said packet when said destination address matches said negative address; and

accepting said packet at said node when a match exists between said destination address and said maskaddresses without a match of a negative address to said destination address.

9. (Allowed) The method of claim 8, wherein said creating step further includes the steps of:

determining when said node contains at least two consecutive addresses, wherein a particular number of possible consecutive addresses represents an address space; and

aggregating, in response to said determining step, said addresses within said address space to create a single representative maskaddress.

10. (Allowed) The method of Claim 9, wherein said aggregating step represents said aggregated addresses as a mask address having an associated space variable and a prefix variable, said space variable indicating a number of addresses within said space, and said prefix variable indicating a number of relevant bits to be utilized for comparisons with a destination address of a packet on said network, whereby input time for processing packets traveling on the network is reduced.

11. (Allowed) The method of Claim 9, wherein said aggregating step further includes the steps of completing a percent aggregation of said consecutive addresses within said space which are present on said node.

12. (Allowed) The method of claim 9, wherein said aggregating step further includes the steps of:

analyzing whether said space has missing addresses; and in response to a determination that said space has missing addresses, generating a corresponding negative address for each one of said missing addresses, wherein said negative address is utilized along with said maskaddress to determine if a particular destination address is on said node once said maskaddress matches said destination address.

13. (canceled)

14. (Allowed) A computer program product for effectively decreasing time for destination address resolution of packets at a network node, said program product comprising:

a computer readable medium; and

program instructions on said computer readable medium for:

an aggregation utility, for aggregating multiple addresses hosted on said network node into a single representative maskaddress;

a negative address utility for determining which addresses from within said address space are not present on said network node and associating a corresponding negative address with said maskaddress, wherein the negative address is utilized along with said maskaddress to more efficiently select packets with destination addresses that are located on said network node; and

an address resolution utility for determining destination addresses of said received packets using said maskaddress and said negative address.

15. (Allowed) The computer program product of Claim 14, wherein said program instructions for said aggregating utility comprises program instructions for:

creating said maskaddress when said multiple addresses contain at least a single most significant bit in common to create a definable address space of consecutive addresses; and

determining a prefix value for said maskaddress that indicates the number of relevant bits within the consecutive addresses to be utilized within said maskaddress

16. (Allowed) The computer program product of Claim 15, further comprising program instructions for utilizing a percent aggregation rule to create said maskaddress.

17. (canceled)

18. (Allowed) The computer program product of Claim 17, wherein said program instructions for said negative address utility includes program instructions for:

determining whether a particular percentage of said consecutive addresses are present within said node;

creating said negative address when said particular percentage of consecutive addresses is present in said subspace.

19. (Allowed) The program product claims of Claim 18, wherein said program instructions for said address resolution utility includes program instructions for a comparison utility for comparing said destination address with said maskaddress.

20. (Allowed) The computer program product of Claim 15, wherein said program instructions for said percent aggregation rule utilizes a 75 percent aggregation rule.